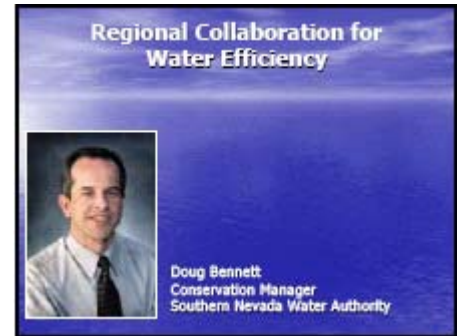


Okanagan Water Stewardship Council June 14, 2007

Doug Bennett, Conservation Manager for the Southern Nevada Water Authority presented a Powerpoint presentation titled “Regional Collaboration for Water Efficiency”. He participated via conference call from his office in Las Vegas, Nevada.



Slide 1: Introduction

“Necessity, who is the Mother of invention” ~ Plato, The Republic

Slide 2: Many communities may find themselves in a bad situation and then have to find a way to deal with it. Start talking to each other before it is a necessity.

Slide 3: One single federally owned treatment plant at Lake Mead for many major cities but no coordinated conservation plan. Even though they were sharing, each entity thought they were entitled – who should get what next? Multiple entities fighting over water. Extraordinary growth.

Late 1980's

- Three fast-growing cities competing for Colorado River water
- A single, federally-owned treatment plant
- No coordinated conservation plan
- Limited info on supplies and future demand
- Prospect of water shortage by mid-1990's

Slide 4: Federal government said we can't tell you how, you as neighbours need to work it out and let us know how you want it to go. Not Lord of the Flies but more like Gilligan's Island. Comprehensive review of the commitments each city had made. 10,000 acre plan for development, usually that gets a water commitment – so agencies were writing cheques on future supplies without talking to each other. Confusing path for everyone to navigate as these inequities were created – people were held to a higher standard in one jurisdiction versus another.

Early 1990's

- Began integrated water resource planning
 - First comprehensive review of water commitments
- Paved the way for refocused interagency relationships
- Jurisdictions adopted similar, but inconsistent, ordinances to limit lawn grass and man-made lakes

Slide 5: Paradigm Shift

Planning together out into the future. A portfolio based-approach.

- Switched from simple accounting process to water resource management planning
- Resource Plan considers both temporary and permanent supplies to create a portfolio of shared resources
- Resource Plan is updated annually
- Agreed to pursue conservation regionally



Slide 6: Southern Nevada Water Authority

Some are waste water, some are purveyors, must include agencies that have access to reclaimed water. A gallon of wastewater, reclaimed water and raw water have the same value under our conservation plan.

Slide 7: Purpose of SNWA

Provides a united front when we meet with national or state-wide agencies. For example, when we're negotiating rights on the Colorado River, we go as SNWA instead of Henderson Water District. Anything that serves more than one agency will be operated regionally. Anything designed to protect source water quality is also under SNWA. 90% from Colorado River, concerned about water quality, urban run-off, industrial/ag waste. Groundwater protection program throughout the entire basin – everyone with a well pays into a groundwater protection program. Also looks at septic tanks.

- **Regional coordination and management of water resources**
- **Unified national and regional representation**
- **Construct & operate regional facilities**
- **Protect and enhance quality of the water resource**
- **Promote & effect regional water efficiency**

Slide 8: Why SNWA works

Multiple municipalities are intimately dependent on each other. We are all in the same lifeboat. Limited and well-defined scope – spell out the roles clearly, no blurred lines: what a jurisdiction does, what a water agency does, all spelled out. We have a shared economy and one community. To the people who live here, it's one city, whether you live in Henderson, Clark County, or Las Vegas. The economy itself will decide on where the water gets delivered, inasmuch as water is available.

Conservation work group representing all 7 agencies. Monthly update of every customer who has participated in a program.

Equal agency power is the most stunning thing. Even Boulder City (the smallest agency) wields as much power as the Las Vegas Valley Water District (the largest agency). It says everyone is equal, we are the seven musketeers, we all look out for each other.

- **SNWA's limited and well-defined scope**
- **Focus on mutual success of the community and the regional economy**
- **Strength in partnership to achieve member goals**
- **Interagency staff coordination precedes board actions**
- **Equal agency power, regardless of size**

Slide 9: Lake Mead

Largest man-made body of water in North America. Lake has been there for 75 years. No green stuff around the edges. That white ring is 100' high, ten stories high. This is an example of drought. Even where we put water, nothing will grow.



Slide 10: Lake Mead Aerial Photo

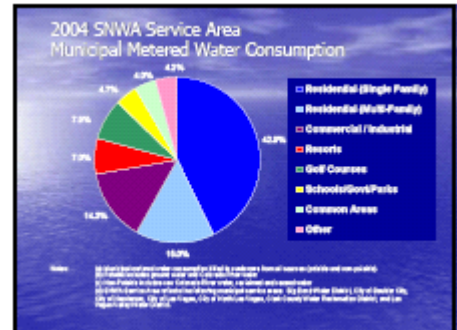
Shoreline recession from 2000 to 2004. Yellow circle shows dominant marina on Lake Mead. In 2000, elevation was 1214'.

Slide 11:

Today it's 1115' and losing about a foot a week as water is delivered downstream to other users.

Slide 12: Does Las Vegas treat water as entertainment, not a resource?

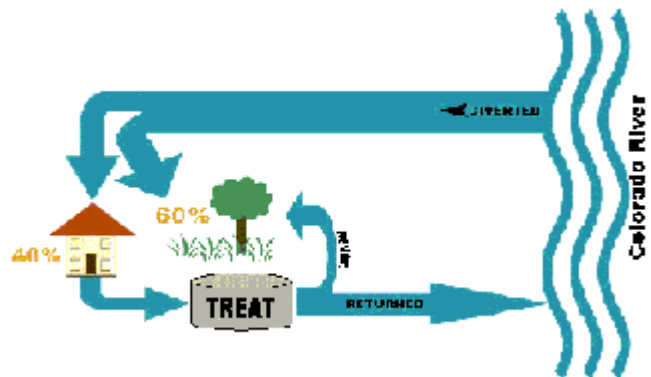
First perception was must be all the casinos who are using the water... but funny enough, the majority goes to single family and multi-family housing (42.9% + 15%). Common areas include private landscaping for housing developments, master-planned communities.



4.2% is used for dust abatement, construction, through fire hydrants.

Slide 13: Return Flow Credits

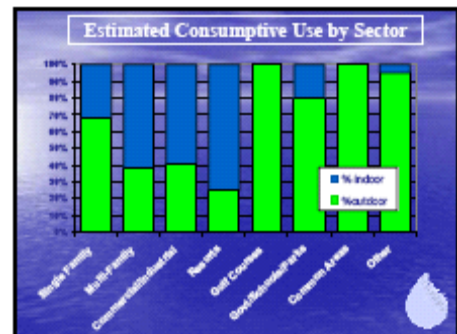
Overreacting to outdoor conservation? Colorado River water is consumed primarily by landscape and cooling. Indoor water use has negligible impact. Great infrastructure, lose less than 5% between delivery and treatment, but 60% of water is used consumptively (landscaping, air-conditioning, evaporation from landscaping).



There is no farming here, no significant agricultural use so that plays no role in our agency.

Slide 14:

10' of water per year on a lawn. Mostly these lawns are purely ornamental. Only time they got walked on, someone was running a lawnmower.

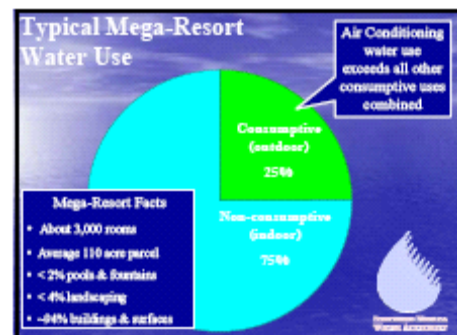


Slide 15:

From 73 to 17 gallons per square foot when changing from lawn to Water Smart landscape.

Slide 16: Consumptive Use by Sector

Need to know how much consumptive use by sector – use these facts to find out where to act!



Slide 17: What about Mega-Resorts?

Mega-resort non-consumptive use is 75%. 94% of space is consumed by buildings and surfaces. Air-conditioning

exceeded all other water uses – it is the single largest consumptive water use – but people didn't want to believe it. Perception is important but you cannot let it guide all of your conservation efforts.

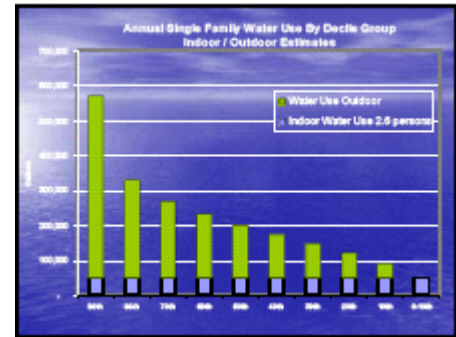
Slide 18: Caesar's Palace is now more English-garden style (no lawn).

Slide 19: Aerial photo of Caesar's Palace – 80 acre property – vast majority is building and parking lot.

Slide 20:

Annual Single Family Water Use By Decile Group

Similar results were found in Albuquerque, New Mexico and Las Vegas, Nevada. Not everyone is your target. People who are already doing the job shouldn't need to be cutting back, some people are already at where you want them to be. Be careful not to penalize the people who have already done what you want them to do.



The top 10% of homes use as much water (580,000 gallons) as the bottom 50% of people.

Slide 21: Successful Implementation

Know the big picture– downplay conserving indoor when outdoor is so much more important. Don't let people rationalize that they are making a difference when they're not. Eg. Change your landscaping versus turn off the water while you brush your teeth. Probably already doing that second one, but the first is much bigger and more difficult and significant.

1. **Know the big picture – Where each of your water supplies come from and the policies that regulate their use.**
2. **Know who uses the water in your community and how they use it. Focus upon and communicate the facts and vital opportunities.**
3. **Establish key values before you develop the strategies.**
4. **Involve & inform key stakeholders in programming and strategies, even if informal. Allow choices wherever possible.**

You want people to be on your bandwagon. You want them to jump on it, cheer from it, not throw rocks at it.

Slide 22: Successful Implementation

Pro-active and getting friendly with the media. Rebate program makes a substantial impact, effective at changing people's water use but they're not the only thing. Rebates are vital to maintain community support. Economy can be stimulated with water efficiency rather than hurt.

1. **Community information and understanding accelerate and expand results. Partner with the media.**
2. **Incentives play a supporting role in demand reductions but are vital to sustain community support.**
3. **Assure equity in regulatory programs – everyone needs to contribute.**
4. **Enforce what you adopt. Credibility is irreplaceable.**

"A policy that leaves no sector unscathed!"

ENFORCE WHAT YOU ADOPT – CREDIBILITY IS IRREPLACEABLE.

Too big a hammer, you'll be scared to enforce it. Create your laws to be simple and practical to enforce or ideally, self-enforcing.

Slide 23: SNWA Drought Response Planning

Collaborative process for all jurisdictions, they then go back and sell this to their agencies and create a model ordinance. Worth compromising to find common ground so all agencies can adopt the policies – hold everyone to the same standard, after all, we're all sharing the same water supply.

- **Interagency team develops guiding plan**
- **All jurisdictions adopt plan by resolution and collaborate on model ordinance**
- **Proposed requirements negotiated to assure consistency and equity**
- **Each jurisdiction adopts ordinances and is responsible for enforcement**
- **Public and industry input is vital and occurs at various stages of the process**

Slide 24: SNWA Drought Planning Outcomes

Seasonal watering schedule and neighbourhood watering schedules. 250 new people move here every day. Purely ornamental grass was still being put in. You can't stop growth, you can manage it and manage the resources it requires. Types of fixtures, water efficiencies for all new development. Existing residents are being asked to go back and help us correct past mistakes, but all new development is being held to a higher standard.

Principal Regulatory Tools

- **Restricted seasonal watering schedules**
- **Landscape development restrictions**
- **Golf course water budgets**
- **Water waste penalties**
- **Ornamental water feature restrictions**

Water waste penalties – water flows or sprays off your property. One agency collected \$400,000 last year in penalties.

Ornamental water feature restrictions – eg. Gas station with fountain in front. This doesn't impact as much, but still sends the wrong message. Purely ornamental with no economic value must be turned off.

Slide 25: Primary Regulatory Tools

New Development Standards

- **No ornamental turf in commercial landscapes & HOA common areas. Parks allowed.**
- **No lawns in new residential front yards. Backyard lawns limited.**
- **Apartments & golf courses limited to half of turf allowance under non-drought conditions.**

The Golf industry was already overbuilt and not enormously profitable. The profit in golf development was typically in the lot premiums for houses on the perimeter. Restrictions and moratoriums on golf course development were not resisted because the existing courses did not



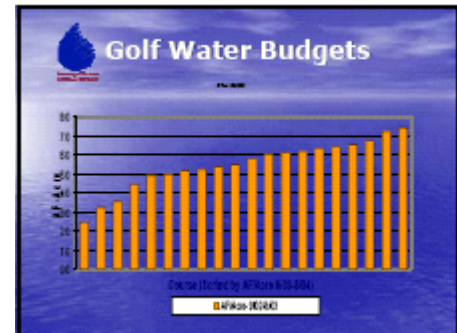
want to see additional competition. Furthermore, escalating land prices made golf course communities less profitable.

Slide 26: Water Waste Enforcement

First time a warning, second time it's \$40, then \$80, \$160, \$320, \$640... what is the level at which they start paying attention. For a homeowner this might work. Depending on the size of customer, these penalties can be scaled according to use – eg. Apartment building with an \$11,000 a month bill wouldn't pay attention to a \$40 fine. Not as much political friction as you would think: No one likes to admit they waste water, what is the benefit of running water down the street? That is an indefensible position.

Slide 27: Golf Water Budgets

Golf courses – aerial photos were used to measure how many acres of golf there was, then we measured how much water use per acre. We gave the golf courses a choice: Would you rather have a budget or assigned watering days? They chose a budget. If you draw a line at 6' of water, that affects 30% of the courses and now you have 2/3 support from the golf industry.



Better to do the above, than force everyone to go to “90% of last year's use”, while the golf course on the left side of the graph is already highly efficient.

Slide 28: Conversion of non-functional turf is a major strategy for coping with water budgets.

Residential owners of houses on golf course were those most concerned with the lack of grass. Once this change is underway, they accept it and embrace it. Homeowners in some areas were commenting and asking “when is conversion happening?” because they thought the landscaping was attractive. Just remember it's not instant gratification like sod.



Slide 29: Incentive Programs

Incentive programs offer rebates for lawn conversion – a 10-year commitment for the homeowner, or return the money. In 7 years, SNWA has rebated 85 million square feet of lawn conversion, saving over 4.7 billion gallons annually. About 1,000 property owners apply to convert to Water Smart Landscape every month.



Slide 30: Questions?

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